

**CERTIFICATE OF GRANT OF PATENT****批予專利證明書****Patents Ordinance (Chapter 514)****專利條例 (第 514 章)****SHORT-TERM PATENT 短期專利**

I hereby certify that a short-term patent with the following particulars has this day been granted 茲證明下述短期專利在今日批予:

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**Application No. 申請編號 :** 00103711.2

**Title of Invention 發明名稱 :**

PIPE FITTINGS

管配件

**Term of Short-term Patent 短期專利有效期 :**

Eight years commencing on 20.06.2000

由 20.06.2000 年起計 8 年

**Dated this 25th May, 2001**

二零零一年五月二十五日



**Patents Registry  
Intellectual Property Department  
The Hong Kong Special Administrative Region  
香港特別行政區知識產權署專利註冊處**

**Stephen Selby  
Registrar of Patents  
專利註冊處處長謝肅方**

[19] Patents Registry  
The Hong Kong Special Administrative Region  
香港特別行政區  
專利註冊處

[11] 1031171 A

[12] **SHORT-TERM PATENT SPECIFICATION**  
**短期專利說明書**

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25.05.2001

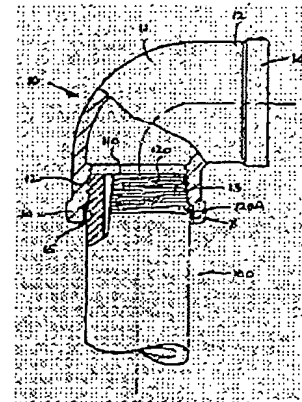
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[54] PIPE FITTINGS 管配件

[57] A pipe fitting (10) comprising a hollow body (11) and at least one open end (12) for connection to another pipe fitting (100), said end (12) being pre-formed with internal screw threads (13). The end (12) includes an integral extension collar (14) which has an inner diameter relatively larger than that of the screw threads (13) for surrounding unused trailing screw threads (120A) of the other pipe fitting (100) and forming an annular gap (15) there between to hold a sealing compound (X).  
一種管配件(10)·其包括一空心體(11)和至少一個用於與另一管配件(100)相連接的開口端(12)·上述開口端(12)預成型有內螺紋(13)·該開口端(12)包括一成一體的延伸凸緣(14)·其具有一內徑·比該內螺紋(13)的內徑大·用以罩繞另一管配件(100)的未啮合的尾部螺紋(120A)·並且在其間形成一環形間隙(15)·以便保持住封口膠(X)·



This print reflects an amendment of specification under section 120 of the Patents Ordinance.

本文件顯示·說明書已根據專利條例第 120 條修訂·

HK 1031171 A

-1-

PIPE FITTINGS

The present invention relates to pipe fittings for use in building pipe lines for delivering, particularly but not  
5 exclusively, cooking and heating gas.

BACKGROUND OF THE INVENTION

Pipe fittings are in abundant use for building pipe lines  
10 to deliver fluid from one location to another. They are available in a vast variety of forms and sizes for joining pipes together in different layouts. A typical low-cost material used for producing pipe fittings and pipes is iron, and the final products are usually galvanised with a  
15 coating of zinc or like for protecting the base material against rusting.

Pipes are cut with screw threads for joining purposes, whereby the base material at the joining positions is  
20 inevitably exposed. The base material adjacent to the joints upon completion may remain exposed, which would require protection. At present, paint is normally used for that purpose but is found to be unreliable.

25 The invention seeks to mitigate or at least alleviate such a problem by providing an improved pipe fitting.

SUMMARY OF THE INVENTION

HK 1031171 A

-2-

According to the invention, there is provided a pipe fitting comprising a hollow body and at least one open end for connection to a pipe, said end being pre-formed with internal screw threads for connection, wherein the end includes an integral extension collar which has an inner diameter relatively larger than that of the screw threads for surrounding unused trailing screw threads of said pipe and forming an annular gap there between to hold a sealing compound, said collar having a wall of a comparable thickness as that of the end behind it and an outer diameter relatively larger than that of the end behind it.

It is preferred that the screw threads are slightly tapered outwards at a small angle with respect to the axis of the end.

Preferably, the pipe fitting is made of a galvanised iron material.

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In a specific embodiment, the pipe fitting is in the form selected from the group of an elbow joint, a T-shaped joint, a straight joint and a end cap.

## 25 BRIEF DESCRIPTION OF DRAWINGS

The invention will now be more particularly described, by way of example only, with reference to the accompanying

HK 1031171 A

-3-

drawings, in which:

Figure 1 is a partial cross-sectional side view of a first embodiment of a pipe fitting in accordance with the invention, which is joined to a pipe as shown;

Figure 2 is a partial cross-sectional side view of a second embodiment of a pipe fitting in accordance with the invention;

Figure 3 is a partial cross-sectional side view of a third embodiment of a pipe fitting in accordance with the invention; and

Figure 4 is a cross-sectional side view of a fourth embodiment of a pipe fitting in accordance with the invention.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

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Referring initially to Figure 1 of the drawings, there is shown a first pipe fitting embodying the invention, which is in the form of a 90° elbow joint 10 shown in connection to a straight pipe 100. The pipe 100 includes one end 110 that is cut with external screw threads 120 for connection.

The elbow joint 10 has an arcuate hollow body 11 and two

HK 1031171 A

-4-

- cylindrical open ends 12. Each end 12 is pre-formed with internal screw threads 13 and includes an integral extension collar 14 having an inner diameter relatively larger than that of the screw threads 13. The wall of the collar 14 has a comparable or substantially the same thickness, for strength, as that of the end 12 behind it. The outer diameter of the collar 14 is also relatively larger than that of the body of the end 12.
- 10 The joint 10 and the pipe 100 are connected together through inter-engagement between their threads 13 and 120. In order to achieve a connection that is as tight as possible, the threads 13 and 120 are slightly tapered outwards and inwards respectively, at a small angle of about  $1^{\circ}$  to  $5^{\circ}$  with respect to the central axes of the joint end 12 and pipe end 110, such that the pipe end 110 may be tightened into the joint end 12 through a wedge action. Accordingly, not all of the threads 120 will in practice engage with the threads 13, thereby leaving one or two turns, for example, of trailing threads 120A being unused and hence exposed. This will particularly be the case when the threads 120 are cut in situ, as there is a tendency or practice to cut the threads 120 slightly longer than the threads 13, by one or two turns for example.

The collar 14 is made sufficiently long to cover by surrounding the otherwise exposed trailing threads 120A of

HK 1031171 A

-5-

the pipe 100. An annular gap 15 is formed between the inner surface of the collar 14 and the outer surface of the pipe end 110, including the unused trailing threads 120A, which is completely filled with a sealing compound X.

The sealing compound X can easily be applied into collar 14, where it is held stably in the gap 15. Apart from sealing the joint, the compound X also protects the base material (iron) of the pipe 100 exposed at the unused threads 120A against rusting. As the unused threads 120A are concealed within the collar 14, the joint is given a tidier appearance.

Figure 2 shows a second pipe fitting embodying the invention, which is in the form of a T-shaped joint 20 having a hollow body 21 and three open ends 22 of different diameters for connection to pipes. Each end 22 is pre-formed with internal screw threads 23 and includes an integral extension collar 24. The collars 24 have a very similar construction as the aforesaid collar 14 and are provided for the same function as described above.

Figure 3 shows a third pipe fitting embodying the invention, which is in the form of a straight joint 30 having a hollow body 31 comprising opposite open ends 32 and 32' for connection. The first end 32 is formed with internal screw threads 33 and includes an integral

HK 1031171 A

-6-

extension collar 34 similar to the aforesaid collar 14. The other end 32' is formed with external screw threads 33' (slightly tapered inwards) for male connection. The outside of the body 31 has a hexagonal shape to facilitate  
5 turning by a spanner.

Figure 4 shows a fourth pipe fitting embodying the invention, which is in the form of an end cap 40 having a (hollow) body 41 and a single open end 42 for closing an  
10 end of a pipe. The end 42 is formed with internal screw threads 43 and includes an integral extension collar 44 for performing the same function as the aforesaid collar 14. The body 41 has external ribs to facilitate turning.

15 The invention has been given by way of example only, and various modifications of and/or alterations to the described embodiments may be made by persons skilled in the art without departing from the scope of the invention as specified in the appended claims.

HK 1031171 A

-7-

CLAIMS

1. A pipe fitting comprising a hollow body and at least one open end for connection to a pipe, said end being pre-  
5 formed with internal screw threads for connection, wherein the end includes an integral extension collar which has an inner diameter relatively larger than that of the screw threads for surrounding unused trailing screw threads of said pipe and forming an annular gap there between to hold  
10 a sealing compound, said collar having a wall of a comparable thickness as that of the end behind it and an outer diameter relatively larger than that of the end behind it.
- 15 2. The pipe fitting as claimed in claim 1, wherein the screw threads are slightly tapered outwards at a small angle with respect to the axis of the end.
3. The pipe fitting as claimed in claim 1 or claim 2,  
20 being made of a galvanised iron material.
4. The pipe fitting as claimed in any one of the preceding claims, being in the form selected from the group of an elbow joint, a T-shaped joint, a straight  
25 joint and a end cap.

HK 1031171 A

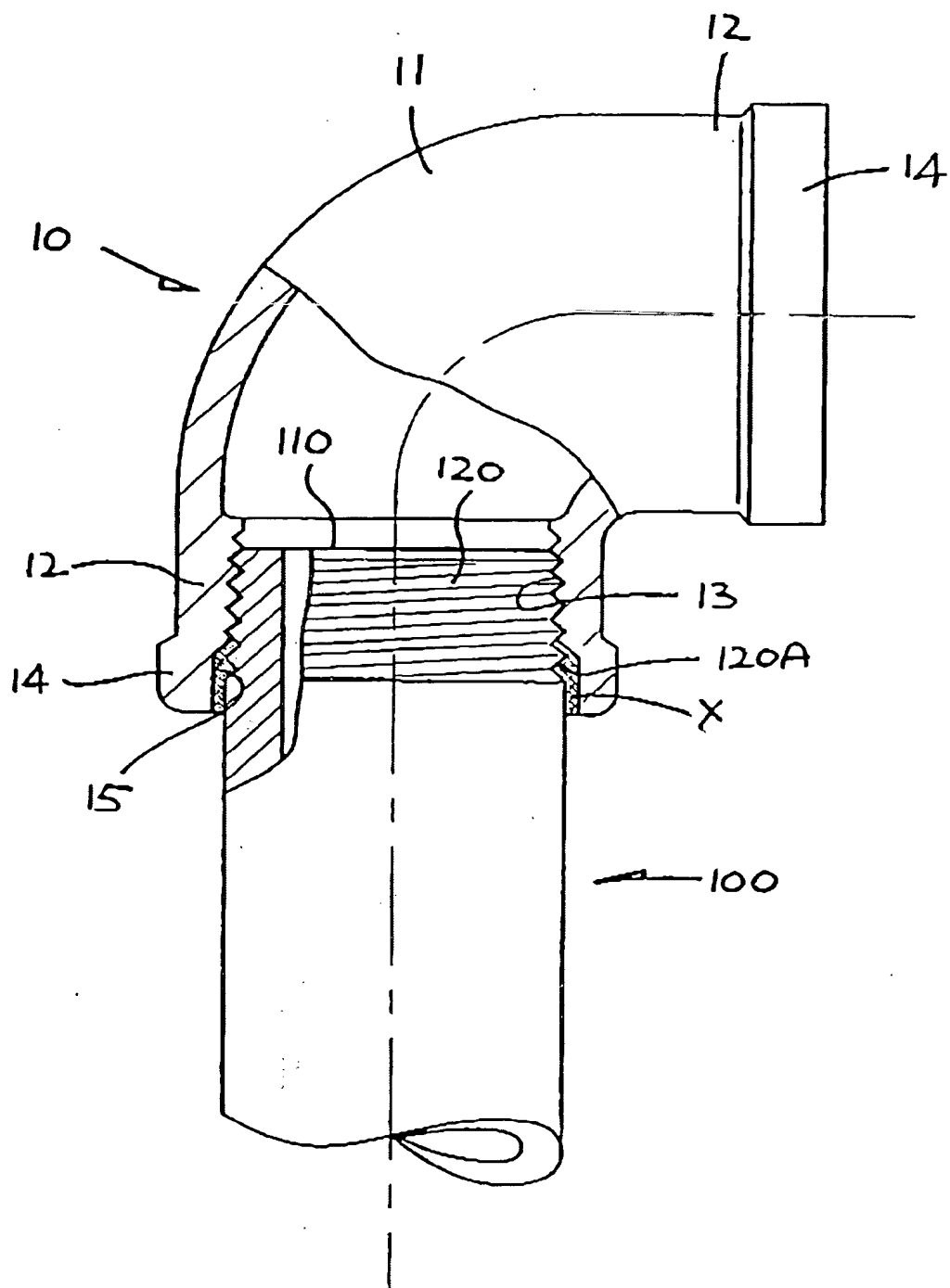
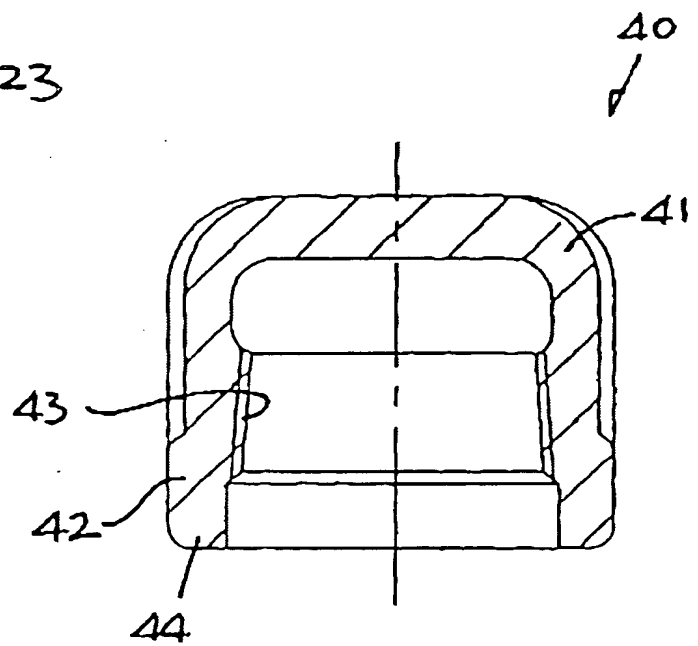
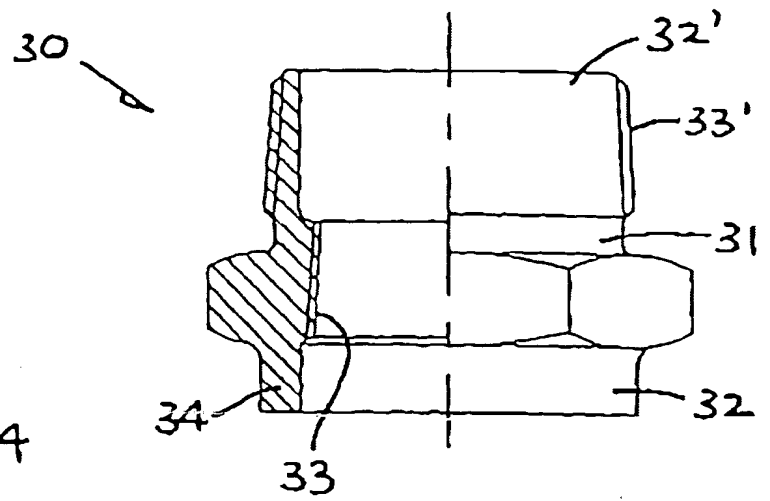
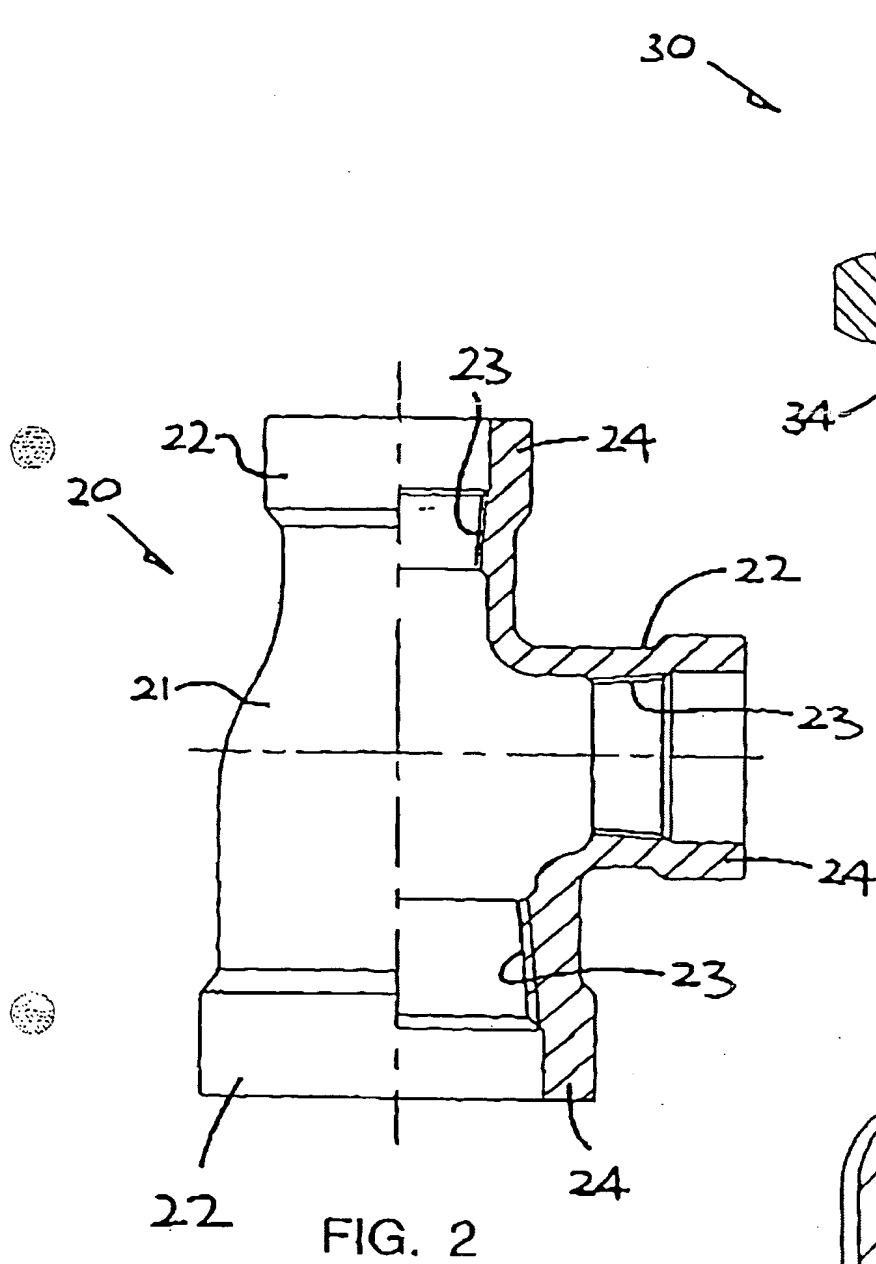


FIG. 1



HK 1031171 A

**AUSTRALIAN PATENT OFFICE  
INTERNATIONAL-~~TYPE~~ SEARCH REPORT**

Applicant	Agent's file reference HP3542	Patent Office Reference no. CS/00/0036
		Date of request for search 20 June 2000
This international-type search report consists of a total of 3 sheets		
The search was based on the following <u>search statement</u> :  <p>A pipe fitting comprising a hollow body and at least one open end for connection to a pipe, said end being pre-formed with internal screws threads for connection, wherein the end includes an integral extension collar which has an inner diameter relatively larger than that of the screw threads for surrounding unused trailing screw threads of said pipe and forming an annular gap therebetween to hold a sealing compound.</p>		

HK 1031171 A

Patent Office Reference no.  
CS/00/0036**A. CLASSIFICATION OF SUBJECT MATTER**Int. Cl.<sup>7</sup> F16L 15/04, 15/08

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC F16L 15/04, 15/08

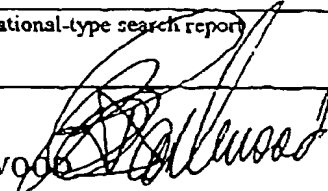
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
AU: IPC as above

Electronic database consulted during the international search (name of database, and where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	US 4770448 A (Strickland) 13 September 1988 see whole document	1, 4, 6
X	WO 94/29627 A (Hydriil) 22 December 1994 see whole document	1, 4, 6
X	WO 94/11664 A (Mobil) 26 May 1994 see whole document	1, 4, 6

☒ Further documents are listed in the continuation of Box C

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>		<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>
Date of the actual completion of the international-type search 10 August 2000	Date of mailing of the international-type search report 10 August 2000	
Name and mailing address AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  B. R. DASHWOOD  Telephone No. (02) 62832121	

HK 1031171 A

Patent Office Reference no.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	Derwent Abstract Accession No 83-786638/41, Class Q65, Q67, JP 58149495 A (Nitto) 5 September 1983	1, 6
A	WO 96/03605 A (Grant) 8 February 1996	
A	Derwent Abstract Accession No 96-445629/45, Class Q67, JP 8219339 A (Hitachi) 30 August 1996	